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EXAMINER	
SINGH, RAMNANDAN P	
ART UNIT	**PAPER NUMBER**
2644	

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/741,950	ISSAA ET AL.	
	Examiner	Art Unit	
	Ramnandan Singh	2644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 December 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *# 4, Dec. 20, 2000*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

The specification recites "ISDN device 20 from network 30" in lines 28 and 29 on page 15. Replace "ISDN device **20**" with "ISDN device **26**".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 5, 6, 11, 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elo [US 6,748,076 B1] in view of Herschler et al [US 6,212,272 B1].

Regarding claim 1, Elo teaches an apparatus for enabling multiple protocol communication over a network shown in Fig. 2, comprising:

a first circuit comprising a low-pass filter (LPF) and an ISDN device operable to communicate first signals in a first frequency band (0 Hz...4kHz) using a first data protocol (ISDN protocol) and to attenuate second signals in a second frequency band (25 kHz...1.1 MHz) using a second data protocol (xDSL protocol); and

a second circuit comprising a high-pass filter (HPF) and an ADSL device operable to communicate the second signal in the second frequency band (25 kHz...1.1 MHz) using the second data protocol (xDSL protocol) [Figs. 1-3; col. 2, lines 15-37; col. 2, line 66 to col. 3, line 15; col. 3, line 40 to col. 4, line 3].

Although Elo employs frequency division multiplexing (FDM) [col. 2, lines 28-37; col. 2, line 66 to col. 3, line 12], he does not teach expressly that the first data protocol (ISDN) supports two distinct modulation techniques-----a first modulation technique and a second modulation technique.

Herschler et al teach an ISDN telecommunication system, as shown in Fig. 1, between a Central office and an ISDN network terminator (NT1) 14 wherein the modulation format used between the central office and the NT1 is known 2B1Q in North America, and 4B3T in Europe and Japan. Thus, the ISDN telecommunication system supports two distinct modulation techniques, namely, 2B1Q and 4B3T [Figs. 1, 3; col. 3, line 50 to col. 4, line 48; col. 5, line 57 to col. 6, line 14].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the two distinct modulation techniques of Herschler et al to the first circuit (ISDN) of Elo in order to provide communications link between computer devices located in North America, and Europe and Japan.

Regarding claim 6, Elo further teaches the apparatus comprising;

an input port (P) connected to the subscriber line and coupled to the first and second circuits (LPF & HPF) (PS2) , the input port operable to couple to a network;

a first output port coupled to the first circuit (LPF), the first output port operable to communicate the first signals in the first frequency band using the first data protocol (ISDN); and

a second output port coupled to the second circuit (HPF) , the second output port operable to communicate the second signals in the second frequency band using the second protocol (xDSL) [Figs. 2, 3; col. 2, line 2 to col. 3, line 15].

Regarding claim 11, Elo further teaches the apparatus, wherein the first data protocol is ISDN and the second data protocol is xDSL [Fig. 2].

Regarding claim 13, the combination of Elo and Herschler et al teaches the apparatus, wherein ;

the first modulation technique is 4B3T ; and

the second modulation technique is 2B1Q [Herschler et al; col. 3, lines 50-62].

Regarding claim 5, Elo teaches an insertion loss of at least 40 dB as needed in the low-pass filter [col. 3, line 58 to col. 4, line 3].

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Elo and Herschler et al as applied to claim 1 above, and further in view of Petzold et al [US 6,118,365].

Regarding claim 12, although Elo teaches employing a well-established ADSL frequency band of 25kHZ.....1.1 MHZ [col. 3, lines 5-6], he does not teach dividing the total ADSL frequency band into the first frequency band comprising a range of 25 kHZ to 80 kHZ; and the second frequency band comprising a range of 125 kHZ to 1.1 MHZ.

Petzold et al teach an ISDN communication system wherein Fig. 2 shows a typical behavior curve of the ISDN system under the first and second modulation techniques [Fig. 2; col. 5, line 45 to col. 6, line 25; col. 1, lines 47-59].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use typical behavior plot of the ISDN system under the first and second modulation techniques of Petzold with Elo to approximately divide the ADSL frequency band into two bands in order to implement the two modulation techniques in the first circuit (ISDN) which approximately correspond s the claimed frequency divisions.

5. Claims 24 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elo [US 6,749,076 B1] in view of Herschler et al [US 6,212,272 B1].

Regarding claim 24, Elo teaches an apparatus for enabling multiple protocol communication over a network shown in Fig. 2, comprising:

a first circuit comprising a low-pass filter (LPF) and an ISDN device operable to communicate first signals in a first frequency band (0 Hz...4kHz) using a first data protocol (ISDN protocol) and to attenuate second signals in a second frequency band (25 kHz...1.1 MHz) using a second data protocol (xDSL protocol); and

a second circuit comprising a high-pass filter (HPF) and an ADSL device operable to communicate the second signal in the second frequency band (25 kHz...1.1 MHz) using the second data protocol (xDSL protocol) [Figs. 1-3; col. 2, lines 15-37; col. 2, line 66 to col. 3, line 15; col. 3, line 40 to col. 4, line 3].

Although Elo employs frequency division multiplexing (FDM) [col. 2, lines 28-37; col. 2, line 66 to col. 3, line 12], he does not teach expressly that the first data protocol (ISDN) supports two distinct modulation techniques-----a first modulation technique and a second modulation technique.

Herschler et al teach an ISDN telecommunication system, as shown in Fig. 1, between a Central office and an ISDN network terminator (NT1) 14 wherein the modulation format used between the central office and the NT1 is known 2B1Q in North America, and 4B3T in Europe and Japan. Thus, the ISDN telecommunication system

supports two distinct modulation techniques, namely, 2B1Q and 4B3T [Figs. 1, 3; col. 3, line 50 to col. 4, line 48; col. 5, line 57 to col. 6, line 14].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the two distinct modulation techniques of Herschler et al to the first circuit (ISDN) of Elo in order to provide communications link between computer devices located in North America, and Europe and Japan.

Further, although the combination of Snow et al and Herschler et al does not teach expressly a, averaging method of determining an optimum load impedance of the first frequency band when the first and second modulation techniques are applied to the first circuit, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use any known methods including the averaging method to determine the common value of the load impedance to minimize the reflections due to mismatch of the load impedances.

Regarding claim 29, Elo teaches the method wherein :
the first communication device is an ISDN telephone (TE3); and
the second communication device is an xDSL router [Fig. 1; col. 2, lines 38-47].

6. Claims 1, 4, 6, 11, 13, 14, 16, 23, 30, 33, 35, 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Snow et al [US 6,418,221 B1] in view of Herschler et al [US 6,212,272 B1].

Regarding claim 1, Snow et al teach an apparatus for enabling multiple protocol communication over a network shown in Fig. 3, comprising:

a first circuit comprising a low-pass filter (LPF) 109 operable to communicate first signals in a first frequency band (300—3400 Hz) using a first data protocol (ISDN protocol) and to attenuate second signals in a second frequency band (24 kHz... 1.1 MHz) using a second data protocol (xDSL protocol) [col. 1, lines 19-24]; and

a second circuit comprising a high-pass filter (HPF) 106 operable to communicate the second signal in the second frequency band (24 kHz... 1.1 MHz) using the second data protocol (xDSL protocol) [Figs. 1-5; col. 1, line 25 to col. 2, line 65].

Snow et al do not teach expressly that the first data protocol (ISDN) supports two distinct modulation techniques-----a first modulation technique and a second modulation technique.

Herschler et al teach an ISDN telecommunication system, as shown in Fig. 1, between a Central office and an ISDN network terminator (NT1) 14 wherein the modulation format used between the central office and the NT1 is known 2B1Q in North

America, and 4B3T in Europe and Japan. Thus, the ISDN telecommunication system supports two distinct modulation techniques, namely, 2B1Q and 4B3T [Figs. 1, 3; col. 3, line 50 to col. 4, line 48; col. 5, line 57 to col. 6, line 14].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the two distinct modulation techniques of Herschler et al to the first circuit (ISDN) of Snow et al in order to provide communications link between computer devices located in North America, and Europe and Japan.

Claim 14 is essentially similar to claim 1 except for a multi-stage low-pass filter. Snow et al teach a multi-stage low-pass filter [Fig. 2; col. 1, lines 62-65].

Claim 30 is essentially similar to claim 1 except a first communication device and a second communication device.

Snow et al teach means for communicating a first signal to a first communication device (105); and

Means for communicating a second signal to a second communication device (108) [Fig. 3].

Regarding claim 4, Snow et al further teach the apparatus wherein the first

circuit is a multistage low-pass filter (102) shown in Fig. 2, comprising a plurality of stages, each stage contributing a substantially similar frequency roll-off [Fig. 2; col.1, lines 62-65].

Claims 16 and 33 are essentially similar to claim 4 and is rejected for the reasons stated above apropos of claim 4.

Regarding claim 6, Snow et al further teach the apparatus comprising;

an input port coupled to the first and second circuits (LPF 109 & HPF 106) , the input port operable to couple to a network;

a first output port coupled to the first circuit (LPF), the first output port operable to communicate the first signals in the first frequency band using the first data protocol (ISDN); and

a second output port coupled to the second circuit (HPF) , the second output port operable to communicate the second signals in the second frequency band using the second protocol (xDSL) [Figs.3-4; col. 4, lines 3-21].

Regarding claim 11, Snow et al further teach the apparatus, wherein the first data protocol is ISDN and the second data protocol is xDSL [Fig. 3].

Claim 35 is essentially similar to claim 11 and is rejected for the reasons stated above. Apropos of claim 11.

Regarding claim 13, the combination of Snow et al and Herschler et al teaches the apparatus, wherein ;

the first modulation technique is 4B3T ; and

the second modulation technique is 2B1Q [Herschler et al; col. 3, lines 50-62].

Claims 23 and 37 are essentially similar to claim 13 and are rejected for the reasons stated above.

7. Claims 7, 8, 17, 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snow et al and Herschler et al as applied to claims 6, 14 above, and further in view of Pinel [US 3,848,098].

Regarding claim 7, Snow et al further teach the apparatus , wherein the first circuit is a multistage low-pass filter (102), as shown in Fig. 2, comprising two to four stages [col. 1, lines 63-65], wherein

a first stage coupled to the input port;

a second stage coupled to the second stage;

a third stage coupled to the second stage; and

a fourth stage coupled between the third stage and the first output port [Fig. 3], the first, second, third and fourth stages [see Fig. 2 for details], comprising;

a first inductive element (L1);

a second conductive element (L1') coupled in parallel to the first inductive element; and

a capacitive element (C1) coupled in series to the first inductive element ,

wherein the first inductive element (L1) operable to couple to a tip wire of a twisted pair line and the second inductive element (L1') operable to couple to a ring wire of the twisted pair line [Figs. 1-2; col. 1, line 25 to col. 2, line 20].

Although Snow et al teach using a shunt capacitor (C1), they do not teach expressly a third inductive element coupled in series to the shunt capacitor. However, the use of an R-L-C resonant circuit to tune up the performance of a circuit is well-known in the art.

Pinel teaches employing a resistively damped series resonant circuit, as shown in Fig. 2, comprising:

a shunt capacitor (53) connected in series with an inductor (52) and a resistor (51) to improve the performance for a telephone balance network [Figs. 1-4; col. 2, lines 9-41].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to employ the resistively damped series resonant circuit (50) of Pinel to replace the shunt capacitor (C1) of the first stage filter of Snow et al in order to provide

a better impedance match with an inductively loaded telephone line [Pinel; col. 4, lines 34-41].

Claim 17 is essentially similar to claim 7 and is rejected for the reasons stated above.

Regarding claim 8, the combination of Snow et al and Pinel further teaches the apparatus wherein the first stage further comprises a resistive element coupled in series between the first and third inductive elements to provide a better impedance match at the input port; and the fourth stage further comprises a resistive element coupled in series between the first and third inductive elements to provide a better impedance match at the output port [Pinel; col. 1, lines 34-43; col. 4, lines 34-41].

Claim 18 is essentially similar to claim 8 and is rejected for the reasons stated above.

8. Claim 9, 20 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snow et al and Herschler et al as applied to claims 6, 14 and 34 above, and further in view of Bella [US 6,137,880].

Regarding claim 9, although Snow et al teach one embodiment of a high-pass Filter shown in Fig. 4, they do not teach a DC-coupled high-pass filter.

Bella teaches a DC-coupled high-pass filter to obtain xDSL signals shown in Fig. 7 , the high-pass comprising:

a first capacitive element coupled in series between the input port and the second output port (i.e. ADSL port) [see Fig. 7];

a second capacitor coupled in series between the input port and the second output port; and

such that the first capacitive element is operable to couple to a tip wire of a twisted pair line, the second capacitive element is operable to couple the ring wire of the twisted pair line [Figs. 2-2a; 7-8; col. 2, lines 1-18].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to employ the DC-coupled high-pass filter of Bella with Snow et al as an alternative embodiment of the high-pass filter of Snow et al in order to block a DC signal and obtain xDSL signals free from low-frequency signals.

Claims 20 and 34 are essentially similar to claim 9 and are rejected for the reasons stated above apropos of claim 9.

9. Claims 2, 3, 10, 12, 15, 22, 31, 32, 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snow et al and Herschler et al as applied to claims 1, 14, and 30 above, and further in view of Petzold et al [US 6,118,365].

Regarding claim 12, although Snow et al teaches employing a well-established ADSL frequency band of 24kHZ.....1.1 MHZ [col. 1, lines 23-24], they do not teach dividing the total ADSL frequency band into the first frequency band comprising a range of 25 kHZ to 80 kHZ; and the second frequency band comprising a range of 125 kHZ to 1.1 MHZ.

Petzold et al teach an ISDN communication system wherein Fig. 2 shows a typical behavior curve of the ISDN system under the first and second modulation techniques [Fig. 2; col. 5, line 45 to col. 6, line 25; col. 1, lines 47-59].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use typical behavior plot of the ISDN system under the first and second modulation techniques of Petzold with Snow et al to approximately divide the ADSL frequency band into two bands in order to implement the two modulation techniques in the first circuit (ISDN) which approximately corresponds the claimed frequency divisions.

Claims 22 and 36 are essentially similar to claim 12 and are rejected for the reasons stated above apropos of claim 12.

Regarding claim 10, Snow et al teach the apparatus wherein the first circuit is a four-stage low-pass filter wherein each stage is a second-order filter [Fig. 2; col. 1, line 62 to col. 2, line 12]. Thus the four-stage filter is basically an eighth order low-pass filter. Further, Fig. 2. of Petzold shows that the low-pass filter has approximately a cutoff frequency for the first frequency band at 100 kHZ.

Regarding claim 2 , although the combination of Snow et al, Herschler et al and Petzold et al does not teach expressly a, averaging method of determining an optimum load impedance of the first frequency band when the first and second modulation techniques are applied to the first circuit, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use any known methods including the averaging method to determine the common value of the load impedance to minimize the reflections due to mismatch of the load impedances.

Claim 31 is essentially similar to claim 2 and is rejected for the reasons stated above apropos of claim 2.

Regarding claim 3 , the combination of Snow et al, Herschler et al and Petzold et al does not teach expressly determining specific values of the load impedances for each of the two modulation techniques applied, and finally determining the average value out of the two values; it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to determine the specific values of the

impedances using the circuit parameters subject to circuit, system and design constraints.

Claims 15 and 32 are essentially similar to claim 3 and are rejected for the reasons stated above apropos of claim 3.

10. Claims 5, 19 and 21 arte rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snow et al and Herschler et al as applied to claims 1, 18 and 19 above.

Regarding claim 19, although the combination of Snow et al, Herschler et al and Pinel does not teach specific values of the circuit parameters shown in Fig. 2 of Snow et al, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to determine the specific values of the circuit parameters subject to circuit, system and design constraints.

Claims 5 and 21 are essentially similar to claims 19 and are rejected for the reasons stated above.

11. Claims 24-26, 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Snow et al [US 6,418,221 B1] in view of Herschler et al [US 6,212,272 B1].

Regarding claim 24, Snow et al teach an apparatus for enabling multiple protocol communication over a network shown in Fig. 3, comprising:

a first circuit comprising a low-pass filter (LPF) 109 operable to communicate first signals in a first frequency band (300—3400 Hz) using a first data protocol (ISDN protocol) and to attenuate second signals in a second frequency band (24 kHz...1.1 MHz) using a second data protocol (xDSL protocol) [col. 1, lines 19-24]; and

a second circuit comprising a high-pass filter (HPF) 106 operable to communicate the second signal in the second frequency band (24 kHz...1.1 MHz) using the second data protocol (xDSL protocol) [Figs. 1-5; col. 1, line 25 to col. 2, line 65].

Snow et al do not teach expressly that the first data protocol (ISDN) supports two distinct modulation techniques-----a first modulation technique and a second modulation technique.

Herschler et al teach an ISDN telecommunication system, as shown in Fig. 1, between a Central office and an ISDN network terminator (NT1) 14 wherein the modulation format used between the central office and the NT1 is known 2B1Q in North America, and 4B3T in Europe and Japan. Thus, the ISDN telecommunication system supports two distinct modulation techniques, namely, 2B1Q and 4B3T [Figs. 1, 3; col. 3, line 50 to col. 4, line 48; col. 5, line 57 to col. 6, line 14].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply the two distinct modulation techniques of Herschler et al to the first circuit (ISDN) of Snow et al in order to provide communications link between computer devices located in North America, and Europe and Japan.

Further, although the combination of Snow et al and Herschler et al does not teach expressly a, averaging method of determining an optimum load impedance of the first frequency band when the first and second modulation techniques are applied to the first circuit, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to use any known methods including the averaging method to determine the common value of the load impedance to minimize the reflections due to mismatch of the load impedances.

Regarding claim 25 , the combination of Snow et al and Herschler et al does not teach expressly determining specific values of the load impedances for each of the two modulation techniques applied, and finally determining the average value out of the two values; it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to determine specific values using the circuit parameters subject to circuit, system and design constraints.

Regarding claim 26, Snow et al further teach the apparatus, wherein the first data protocol is ISDN and the second data protocol is xDSL [Fig. 3].

Regarding claim 28, the combination Snow et al and Herschler et al teaches the apparatus, wherein ;

the first modulation technique is 4B3T ; and

the second modulation technique is 2B1Q [Herschler et al; col. 3, lines 50-62].

12. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Snow et al and Herschler et al as applied to claim 24 above, and further in view of Petzold et al [US 6,118,365].

Regarding claim 27, although Snow et al teaches employing a well-established ADSL frequency band of 24kHZ.....1.1 MHZ [col. 1, lines 23-24], they do not teach dividing the total ADSL frequency band into the first frequency band comprising a range of 25 kHZ to 80 kHZ; and the second frequency band comprising a range of 125 kHZ to 1.1 MHZ.

Petzold et al teach an ISDN communication system wherein Fig. 2 shows a typical behavior curve of the ISDN system under the first and second modulation techniques [Fig. 2; col. 5, line 45 to col. 6, line 25; col. 1, lines 47-59].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use typical behavior plot of the ISDN system under the first and

second modulation techniques of Petzold with Snow et al to approximately divide the ADSL frequency band into two bands in order to implement the two modulation techniques in the first circuit (ISDN) which approximately corresponds the claimed frequency divisions.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tran Sinh can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SINH TRAN
SUPERVISORY PATENT EXAMINER

Ramnandan Singh
Examiner
Art Unit 2644